^{14}C MEASUREMENTS IN OAK TREE RINGS AROUND 8000 BP

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During excavations for a hydroelectric power plant on the Danube River south of Bratislava, oak trees were found about 20 m below the surface. We present here results of ^{14}C measurements, made in the Bratislava and Tbilisi ^{14}C laboratories, on single tree rings of one of these oak trees.

We used proportional counting and liquid scintillation counting for ^{14}C analysis of cellulose prepared from wood samples. The obtained ^{14}C results are compared with similar measurements of ^{14}C in tree-ring samples from central Europe.

RADIOCARBON DATING IN PALEOECOLOGICAL STUDIES

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One of the most acute problems in environmental studies is assessing human and natural influences on the development of geoecosystems. To obtain reliable results, we must first construct an accurate time scale. For this, radiocarbon dating is the most widely used. In this paper, I analyze the problems and remedies in high-precision paleoecological investigations. Because of different geneses and structures, the main sources of paleoecological information, bog and lake deposits, should be observed separately.

Bog deposits present the following problems:

1. Gathering material for dating from a definite layer
2. Separating admixtures of different ages migrating in water from the material dated
3. Separating roots and rhizomes penetrating from upper layers into the layer being dated, and estimating their influence
4. Extrapolating ages in the sections between the dated layers.

The situation is more complicated in dating lake deposits. "Hard water effect" and allochthonous material cause deviations of ^{14}C ages of 2000–2500 years. Elaborating geochemical or limnological criteria that enables us to estimate the reliability of results has not been successful up to now. For this reason, I have used palynological methods along with geochemical and limnological data. The pollen diagram for a bog situated in the vicinity of a lake is divided mathematically into zones, the borders of which are ^{14}C dated. The ages are then extrapolated to the zone boundaries of the lacustrine pollen diagram. Naturally, a time scale obtained in such a manner is not absolutely reliable.